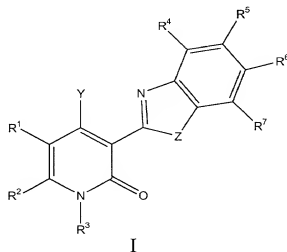


CLAIMS

What is claimed is:

1. A compound having the structure I, a tautomer of the compound, a pharmaceutically acceptable salt of the compound, or a pharmaceutically acceptable salt of the tautomer



wherein,

- Y is selected from the group consisting of -OH, -OR⁸ groups, -SH, -SR⁹ groups, -NR¹⁰R¹¹ groups, -CN, -C(=O)-R¹² groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted aralkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted

17 heterocyclylaminoalkyl groups, substituted and unsubstituted
18 diheterocyclylaminoalkyl groups, substituted and unsubstituted
19 (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted
20 (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted
21 heterocyclyl groups, substituted and unsubstituted aryl groups,
22 substituted and unsubstituted hydroxyalkyl groups, substituted and
23 unsubstituted alkoxyalkyl groups, substituted and unsubstituted
24 aryloxyalkyl groups, and substituted and unsubstituted
25 heterocyclyloxyalkyl groups;

26 Z is selected from the group consisting of O, S, and NR¹³ groups;

27 R¹ and R² join to form a 5 to 7 membered substituted or unsubstituted
28 ring comprising at least one O, N, or S atom;

29 R³ and R¹³ may be the same or different and are selected from the
30 group consisting of H, -OH, substituted and unsubstituted alkoxy
31 groups, substituted and unsubstituted aryloxy groups, -NH₂,
32 substituted and unsubstituted alkylamino groups, substituted and
33 unsubstituted arylamino groups, substituted and unsubstituted
34 dialkylamino groups, substituted and unsubstituted diarylamino
35 groups, substituted and unsubstituted (alkyl)(aryl)amino groups,
36 substituted and unsubstituted heterocyclylamino groups, substituted
37 and unsubstituted diheterocyclylamino groups, substituted and
38 unsubstituted (alkyl)(heterocyclyl)amino groups, substituted and
39 unsubstituted (aryl)(heterocyclyl)amino groups, substituted and
40 unsubstituted heterocyclyloxy groups, substituted and unsubstituted
41 alkyl groups, substituted and unsubstituted aryl groups, -C(=O)H,
42 -C(=O)-alkyl groups, and -C(=O)-aryl groups;

R^4 , R^5 , R^6 , and R^7 may be the same or different and are independently selected from the group consisting of H, Cl, Br, F, I, $-NO_2$, $-CN$, $-OH$, $-OR^{14}$ groups, $-NR^{15}R^{16}$ groups, $-C(=O)R^{17}$ groups, $-SH$, $-SR^{18}$ groups, $-S(=O)R^{19}$ groups, $S(=O)_2R^{20}$ groups, substituted and unsubstituted amidinyl groups, substituted and unsubstituted guanidinyl groups, substituted and unsubstituted primary, secondary, and tertiary alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocycloxyalkyl groups;

R^8 is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, $-C(=O)H$, $-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)O$ -alkyl groups, $-C(=O)O$ -aryl

72 groups, $-C(=O)NH_2$, $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$
 73 groups, $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
 74 $-C(=O)N(alkyl)(aryl)$ groups, $-NH_2$, $-NH(alkyl)$ groups, $-NH(aryl)$
 75 groups, $-N(alkyl)_2$ groups, $-N(alkyl)(aryl)$ groups, $-N(aryl)_2$ groups,
 76 $-C(=O)NH(heterocyclyl)$ groups, $-C(=O)N(heterocyclyl)_2$ groups,
 77 $-C(=O)N(alkyl)(heterocyclyl)$ groups, and
 78 $-C(=O)N(aryl)(heterocyclyl)$ groups;

79 R^9 and R^{18} may be the same or different and are independently
 80 selected from the group consisting of substituted and unsubstituted
 81 alkyl groups, and substituted and unsubstituted aryl groups;

82 R^{10} is selected from the group consisting of H, substituted and
 83 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
 84 and substituted and unsubstituted heterocyclyl groups;

85 R^{11} is selected from the group consisting of H, substituted and
 86 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
 87 substituted and unsubstituted heterocyclyl groups, $-OH$, alkoxy
 88 groups, aryloxy groups, $-NH_2$, substituted and unsubstituted
 89 heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl
 90 groups, substituted and unsubstituted alkylaminoalkyl groups,
 91 substituted and unsubstituted dialkylaminoalkyl groups, substituted
 92 and unsubstituted arylaminoalkyl groups, substituted and
 93 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
 94 $(alkyl)(aryl)$ aminoalkyl groups, substituted and unsubstituted
 95 alkylamino groups, substituted and unsubstituted arylamino groups,
 96 substituted and unsubstituted dialkylamino groups, substituted and
 97 unsubstituted diarylamino groups, substituted and unsubstituted
 98 $(alkyl)(aryl)$ amino groups, $-C(=O)H$, $-C(=O)-alkyl$ groups,

99 -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups,
 100 -C(=O)NH₂, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,
 101 -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂ groups,
 102 -C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclyl groups,
 103 -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,
 104 -C(=O)-N(heterocyclyl)₂ groups, -C(=O)-N(alkyl)(heterocyclyl)
 105 groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
 106 unsubstituted heterocyclylaminoalkyl groups, substituted and
 107 unsubstituted diheterocyclylaminoalkyl groups, substituted and
 108 unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and
 109 unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and
 110 unsubstituted hydroxyalkyl groups, substituted and unsubstituted
 111 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
 112 groups, and substituted and unsubstituted heterocycliloxyalkyl
 113 groups;

114 R¹² is selected from the group consisting of H, -OH, alkoxy groups,
 115 aryloxy groups, -NH₂, -NH(alkyl) groups, -NH(aryl) groups,
 116 -N(alkyl)₂ groups, -N(aryl)₂ groups, -N(alkyl)(aryl) groups,
 117 substituted and unsubstituted alkyl groups, substituted and
 118 unsubstituted aryl groups, -NH(heterocyclyl) groups,
 119 -N(heterocyclyl)₂ groups, -N(alkyl)(heterocyclyl) groups, and
 120 -N(aryl)(heterocyclyl) groups;

121 R¹⁴ is selected from the group consisting of substituted and
 122 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
 123 substituted and unsubstituted heterocyclyl groups, substituted and
 124 unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl
 125 groups, -C(=O)-aryl groups, -C(=O)-heterocyclyl groups,
 126 -C(=O)NH₂, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,

127 -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂ groups,
 128 -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups,
 129 -C(=O)N-(heterocyclyl)₂ groups, -C(=O)N(alkyl)(heterocyclyl)
 130 groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and
 131 unsubstituted aminoalkyl groups, substituted and unsubstituted
 132 alkylaminoalkyl groups, substituted and unsubstituted
 133 dialkylaminoalkyl groups, substituted and unsubstituted
 134 arylaminoalkyl groups, substituted and unsubstituted
 135 diarylaminoalkyl groups, substituted and unsubstituted
 136 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
 137 heterocyclylaminoalkyl groups, substituted and unsubstituted
 138 diheterocyclylaminoalkyl groups, substituted and unsubstituted
 139 (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted
 140 (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted
 141 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
 142 groups, substituted and unsubstituted hydroxyalkyl groups, and
 143 substituted and unsubstituted heterocycloxyalkyl groups;

144 R¹⁵ is selected from the group consisting of H, substituted and
 145 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
 146 and substituted and unsubstituted heterocyclyl groups;

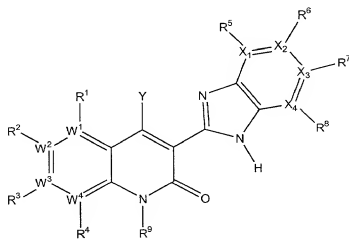
147 R¹⁶ is selected from the group consisting of H, substituted and
 148 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
 149 substituted and unsubstituted heterocyclyl groups, -C(=O)H,
 150 -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)NH₂,
 151 -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,
 152 -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂ groups,
 153 -C(=O)N(alkyl)(aryl) groups, -C(=O)O-alkyl groups,
 154 -C(=O)O-aryl groups, substituted and unsubstituted aminoalkyl

155 groups, substituted and unsubstituted alkylaminoalkyl groups,
 156 substituted and unsubstituted dialkylaminoalkyl groups, substituted
 157 and unsubstituted arylaminoalkyl groups, substituted and
 158 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
 159 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
 160 heterocyclylalkyl groups, -C(=O)-heterocyclyl groups,
 161 -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,
 162 -C(=O)-N(heterocyclyl)₂ groups, -C(=O)-N(alkyl)(heterocyclyl)
 163 groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
 164 unsubstituted heterocyclylaminoalkyl groups, substituted and
 165 unsubstituted diheterocyclylaminoalkyl groups, substituted and
 166 unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and
 167 unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and
 168 unsubstituted hydroxyalkyl groups, substituted and unsubstituted
 169 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
 170 groups, and substituted and unsubstituted heterocyclyloxyalkyl
 171 groups; and

172 R¹⁷, R¹⁹, and R²⁰ may be the same or different and are independently
 173 selected from the group consisting of H, -NH₂, -NH(alkyl) groups,
 174 -NH(aryl) groups, -N(alkyl)₂ groups, -N(aryl)₂ groups,
 175 -N(alkyl)(aryl) groups, -NH(heterocyclyl) groups,
 176 -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
 177 -N(heterocyclyl)₂ groups, substituted and unsubstituted alkyl groups,
 178 substituted and unsubstituted aryl groups, -OH, substituted and
 179 unsubstituted alkoxy groups, substituted and unsubstituted
 180 heterocyclyl groups, substituted and unsubstituted aryloxy groups,
 181 heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH
 182 groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups,
 183 -N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.

- 1 2. The compound according to claim 1, wherein Y is selected
2 from the group consisting of -OH, -OR⁸ groups, and -NR¹⁰R¹¹ groups.
- 1 3. The compound according to claim 1, wherein Y is a -NR¹⁰R¹¹
2 group.
- 1 4. The compound according to claim 1, wherein Z is an NR¹³
2 group.
- 1 5. The compound according claim 1, wherein R⁴ and R⁷ are
2 hydrogen and R⁵ and R⁶ are selected from the group consisting of hydrogen and
3 alkyl groups having from 1 to 4 carbon atoms.
- 1 6. The compound according to claim 1, wherein R⁵ or R⁶ is an
2 -OR¹⁴ group and R¹⁴ is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.
- 1 7. The compound according to claim 1, wherein R⁵ or R⁶ is a
2 -OCH₂(CH₂)_q(heterocyclyl) group and q is 0, 1, 2, 3, or 4.
- 1 8. The compound according to claim 1, wherein R¹⁷ is selected
2 from the group consisting of substituted and unsubstituted alkyl groups, substituted
3 and unsubstituted aryl groups, -NH₂, -NH(alkyl) groups, -N(alkyl)₂ groups,
4 -NH(aryl) groups, -N(aryl)₂ groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl)
5 groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
6 -N(heterocyclyl)₂ groups, and N-containing heterocycles, wherein the N-containing
7 heterocycles are bonded to the carbonyl carbon of the -C(=O)-R¹⁷ group through
8 either a nitrogen atom or a carbon atom in the rings of the N-containing
9 heterocycles.

- 1 9. A compound having the structure III, a tautomer of the
 2 compound, a pharmaceutically acceptable salt of the compound, or a
 3 pharmaceutically acceptable salt of the tautomer



III

wherein,

W^1 , W^2 , W^3 , and W^4 are selected from C or N, and at least one of W^1 , W^2 , W^3 , or W^4 is N;

X^1 , X^2 , X^3 , and X^4 are selected from C or N, and at least one of X^1 , X^2 , X^3 , or X^4 is N;

Y is selected from the group consisting of H, -OH, -OR¹⁰ groups, -SH, -SR¹¹ groups, -NR¹²R¹³ groups, -CN, -C(=O)-R¹⁴ groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted aralkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted

diarylaminooalkyl groups, substituted and unsubstituted
(alkyl)(aryl)aminooalkyl groups, substituted and unsubstituted
heterocyclylaminooalkyl groups, substituted and unsubstituted
diheterocyclylaminooalkyl groups, substituted and unsubstituted
(heterocyclyl)(alkyl)aminooalkyl groups, substituted and unsubstituted
(heterocyclyl)(aryl)aminooalkyl groups, substituted and unsubstituted
heterocyclyl groups, substituted and unsubstituted aryl groups,
substituted and unsubstituted hydroxyalkyl groups, substituted and
unsubstituted alkoxyalkyl groups, substituted and unsubstituted
aryloxyalkyl groups, and substituted and unsubstituted
heterocyclyoxyalkyl groups;

R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , and R^8 may be the same or different and
are independently selected from the group consisting of H, Cl, Br, F,
I, $-\text{NO}_2$, $-\text{CN}$, $-\text{OH}$, $-\text{OR}^{15}$ groups, $-\text{NR}^{16}\text{R}^{17}$ groups, $-\text{C}(=\text{O})\text{R}^{18}$
groups, $-\text{SH}$, $-\text{SR}^{19}$ groups, $-\text{S}(=\text{O})\text{R}^{20}$ groups, $\text{S}(=\text{O})_2\text{R}^{21}$ groups,
substituted and unsubstituted amidinyl groups, substituted and
unsubstituted guanidinyl groups, substituted and unsubstituted
primary, secondary, and tertiary alkyl groups, substituted and
unsubstituted aryl groups, substituted and unsubstituted alkenyl
groups, substituted and unsubstituted alkynyl groups, substituted and
unsubstituted heterocyclyl groups, substituted and unsubstituted
alkylaminooalkyl groups, substituted and unsubstituted
dialkylaminooalkyl groups, substituted and unsubstituted
arylaminooalkyl groups, substituted and unsubstituted
diarylaminooalkyl groups, substituted and unsubstituted
(alkyl)(aryl)aminooalkyl groups, substituted and unsubstituted
heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl
groups, substituted and unsubstituted heterocyclylaminooalkyl groups,
substituted and unsubstituted diheterocyclylaminooalkyl groups,

48 substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups,
49 substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups,
50 substituted and unsubstituted hydroxyalkyl groups, substituted and
51 unsubstituted alkoxyalkyl groups, substituted and unsubstituted
52 aryloxyalkyl groups, and substituted and unsubstituted
53 heterocycloxyalkyl groups, and R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , and R^8
54 may be absent;

55 R^1 is absent or H if W^1 is N;

56 R^2 is absent or H if W^2 is N;

57 R^3 is absent or H if W^3 is N;

58 R^4 is absent or H if W^4 is N;

59 R^5 is absent or H if X^1 is N;

60 R^6 is absent or H if X^2 is N;

61 R^7 is absent or H if X^3 is N;

62 R^8 is absent or H if X^4 is N;

63 R^9 is selected from the group consisting of H, -OH, substituted and
64 unsubstituted alkoxy groups, substituted and unsubstituted aryloxy
65 groups, -NH₂, substituted and unsubstituted alkylamino groups,
66 substituted and unsubstituted arylamino groups, substituted and
67 unsubstituted dialkylamino groups, substituted and unsubstituted

68 diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino
69 groups, substituted and unsubstituted alkyl groups, substituted and
70 unsubstituted aryl groups, $-C(=O)H$, $-C(=O)$ -alkyl groups, and
71 $-C(=O)$ -aryl groups;

72 R^{10} is selected from the group consisting of substituted and
73 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
74 substituted and unsubstituted heterocyclyl groups, substituted and
75 unsubstituted heterocyclylalkyl groups, $-C(=O)H$, $-C(=O)$ -alkyl
76 groups, $-C(=O)$ -aryl groups, $-C(=O)O$ -alkyl groups, $-C(=O)O$ -aryl
77 groups, $-C(=O)NH_2$, $-C(=O)NH$ (alkyl) groups, $-C(=O)NH$ (aryl)
78 groups, $-C(=O)N$ (alkyl) $_2$ groups, $-C(=O)N$ (aryl) $_2$ groups,
79 $-C(=O)N$ (alkyl)(aryl) groups, $-NH_2$, $-NH$ (alkyl) groups, $-NH$ (aryl)
80 groups, $-N$ (alkyl) $_2$ groups, $-N$ (alkyl)(aryl) groups, $-N$ (aryl) $_2$ groups,
81 $-C(=O)NH$ (heterocyclyl) groups, $-C(=O)N$ (heterocyclyl) $_2$ groups,
82 $-C(=O)N$ (alkyl)(heterocyclyl) groups, and
83 $-C(=O)N$ (aryl)(heterocyclyl) groups;

84 R^{11} and R^{19} may be the same or different and are independently
85 selected from the group consisting of substituted and unsubstituted
86 alkyl groups, and substituted and unsubstituted aryl groups;

87 R^{12} is selected from the group consisting of H, substituted and
88 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
89 and substituted and unsubstituted heterocyclyl groups;

90 R^{13} is selected from the group consisting of H, substituted and
91 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
92 substituted and unsubstituted heterocyclyl groups, $-OH$, alkoxy
93 groups, aryloxy groups, $-NH_2$, substituted and unsubstituted

heterocyclalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted alkylamino groups, substituted and unsubstituted arylamino groups, substituted and unsubstituted dialkylamino groups, substituted and unsubstituted diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino groups, $-C(=O)H$, $-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)O$ -alkyl groups, $-C(=O)O$ -aryl groups, $-C(=O)NH_2$, $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups, $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups, $-C(=O)N(alkyl)(aryl)$ groups, $-C(=O)$ -heterocycl groups, $-C(=O)O$ -heterocycl groups, $-C(=O)NH(heterocycl)$ groups, $-C(=O)N(heterocycl)_2$ groups, $-C(=O)N(alkyl)(heterocycl)$ groups, $-C(=O)N(aryl)(heterocycl)$ groups, substituted and unsubstituted heterocyclaminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocycloxyalkyl groups;

R^{14} is selected from the group consisting of H, -OH, alkoxy groups, aryloxy groups, $-NH_2$, $-NH(alkyl)$ groups, $-NH(aryl)$ groups, $-N(alkyl)_2$ groups, $-N(aryl)_2$ groups, $-N(alkyl)(aryl)$ groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, $-NH(heterocycl)$ groups, $-N(heterocycl)_2$ groups, $-N(alkyl)(heterocycl)$ groups, and $-N(aryl)(heterocycl)$ groups;

R¹⁵ is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)-heterocyclyl groups, -C(=O)NH₂, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂ groups, -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups, -C(=O)N-(heterocyclyl)₂ groups, -C(=O)N(alkyl)(heterocyclyl) groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, substituted and unsubstituted hydroxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

R¹⁶ is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, and substituted and unsubstituted heterocyclyl groups;

R¹⁷ is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups,

151 substituted and unsubstituted heterocyclyl groups, $-C(=O)H$,
 152 $-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)NH_2$,
 153 $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups,
 154 $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
 155 $-C(=O)N(alkyl)(aryl)$ groups, $-C(=O)O$ -alkyl groups,
 156 $-C(=O)O$ -aryl groups, substituted and unsubstituted aminoalkyl
 157 groups, substituted and unsubstituted alkylaminoalkyl groups,
 158 substituted and unsubstituted dialkylaminoalkyl groups, substituted
 159 and unsubstituted arylaminoalkyl groups, substituted and
 160 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
 161 $(aryl)(alkyl)$ aminoalkyl groups, substituted and unsubstituted
 162 heterocyclylalkyl groups, $-C(=O)$ -heterocyclyl groups,
 163 $-C(=O)O$ -heterocyclyl groups, $-C(=O)NH(heterocyclyl)$ groups,
 164 $-C(=O)N(heterocyclyl)_2$ groups, $-C(=O)N(alkyl)(heterocyclyl)$
 165 groups, $-C(=O)N(aryl)(heterocyclyl)$ groups, substituted and
 166 unsubstituted heterocyclylaminoalkyl groups, substituted and
 167 unsubstituted diheterocyclylaminoalkyl groups, substituted and
 168 unsubstituted $(heterocyclyl)(alkyl)$ aminoalkyl groups, substituted and
 169 unsubstituted $(heterocyclyl)(aryl)$ aminoalkyl groups, substituted and
 170 unsubstituted hydroxyalkyl groups, substituted and unsubstituted
 171 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
 172 groups, and substituted and unsubstituted heterocycloxyalkyl
 173 groups; and

174 R^{18} , R^{20} , and R^{21} may be the same or different and are independently
 175 selected from the group consisting of H , $-NH_2$, $-NH(alkyl)$ groups,
 176 $-NH(aryl)$ groups, $-N(alkyl)_2$ groups, $-N(aryl)_2$ groups,
 177 $-N(alkyl)(aryl)$ groups, $-NH(heterocyclyl)$ groups,
 178 $-N(heterocyclyl)(alkyl)$ groups, $-N(heterocyclyl)(aryl)$ groups,
 179 $-N(heterocyclyl)_2$ groups, substituted and unsubstituted alkyl groups,

180 substituted and unsubstituted aryl groups, -OH, substituted and
181 unsubstituted alkoxy groups, substituted and unsubstituted
182 heterocyclyl groups, substituted and unsubstituted aryloxy groups,
183 heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH
184 groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups,
185 -N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.

1 10. The compound according to claim 9, wherein one of W^1 , W^2 ,
2 W^3 , and W^4 is N.

1 11. The compound according to claim 9, wherein one of X^1 , X^2 ,
2 X^3 , and X^4 is N.

1 12. The compound according to claim 9, wherein Y is selected
2 from the group consisting of H, -OH, -OR¹⁰ groups, and -NR¹²R¹³ groups.

1 13. The compound according to claim 9, wherein Y is a -NR¹²R¹³
2 group.

1 14. The compound according to claim 9, wherein R⁵ is H, X⁴ is
2 N, and R⁶ and R⁷ are selected from the group consisting of H and alkyl groups
3 having from one to four carbon atoms.

1 15. The compound according to claim 9, wherein R⁶ or R⁷ is an
2 -OR¹⁵ group and R¹⁵ is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.

1 16. The compound according to claim 9, wherein R⁶ or R⁷ is a
2 -OCH₂(CH₂)_q(heterocyclyl) group and q is 0, 1, 2, 3, or 4.

1 17. The compound according to claim 9, wherein R¹⁸ is selected
2 from the group consisting of substituted and unsubstituted alkyl groups, substituted
3 and unsubstituted aryl groups, -NH₂, -NH(alkyl) groups, -N(alkyl)₂ groups,

4 -NH(aryl) groups, -N(aryl)₂ groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl)
5 groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
6 -N(heterocyclyl)₂ groups, and N-containing heterocycles, wherein the N-containing
7 heterocycles are bonded to the carbonyl carbon of the -C(=O)-R¹⁸ group through
8 either a nitrogen atom or a carbon atom in the rings of the N-containing
9 heterocycles.

1 18. A pharmaceutical formulation, comprising the compound
2 according to claim 1 in combination with a pharmaceutically acceptable carrier.

1 19. A method of treating a patient in need of an inhibitor of
2 vascular endothelial growth factor receptor tyrosine kinase, comprising
3 administering an effective amount of the pharmaceutical formulation according to
4 claim 18 to a patient in need thereof.

1 20. A pharmaceutical formulation, comprising the compound
2 according to claim 9 in combination with a pharmaceutically acceptable carrier.

1 21. A method of treating a patient in need of an inhibitor of
2 vascular endothelial growth factor receptor tyrosine kinase, comprising
3 administering an effective amount of the pharmaceutical formulation according to
4 claim 20 to a patient in need thereof.